

120

Docket No.: 50090-470



AF/2814
IFW
PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of : Customer Number: 20277
Masatoshi YASUNAGA : Confirmation Number: 3734
Serial No.: 10/057,923 : Group Art Unit: 2814
Filed: January 29, 2002 : Examiner: D. Nguyen
For: SEMICONDUCTOR DEVICE :

TRANSMITTAL OF APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

Submitted herewith in triplicate is Appellant(s) Appeal Brief in support of the Notice of Appeal filed April 1, 2004. Please charge the Appeal Brief fee of 310.00 to Deposit Account 500417.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT, WILL & EMERY

Arthur J. Steiner
Arthur J. Steiner

Registration No. 26,106

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 AJS:sh:ntb
Facsimile: (202) 756-8087
Date: May 3, 2004

TABLE OF CONTENTS

	Page
I. REAL PARTY IN INTEREST	1
II. RELATED APPEALS AND INTERFERENCES.....	1
III. STATUS OF CLAIMS	2
IV. STATUS OF AMENDMENTS	2
V. SUMMARY OF THE INVENTION	2
VI. ISSUES	3
A. The Rejection:.....	3
B. The issue which arises in this Appeal and requires resolution by the Honorably Board of Patent Appeals and Interferences (the Board), is:.....	3
VII. GROUPING OF CLAIMS.....	3
VIII. THE ARGUMENT	3
IX. Prayer for Relief.....	8
X. APPENDIX.....	10



Docket No.: 50090-470

PATENT

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES**

In re Application of	:	Customer Number: 20277
	:	
Masatoshi YASUNAGA	:	Confirmation Number: 3734
	:	
Serial No.: 10/057,923	:	Group Art Unit: 2814
	:	
Filed: January 29, 2002	:	Examiner: D. Nguyen
	:	
For: SEMICONDUCTOR DEVICE	:	

APPEAL BRIEF

Mail Stop Appeal Brief
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Sir:

This Appeal Brief is submitted in support of the Notice of Appeal filed April 1, 2004.

I. REAL PARTY IN INTEREST

The real party in interest is Renesas Technology Corp.

II. RELATED APPEALS AND INTERFERENCES

Appellant is unaware of any related Appeal or Interference.

05/04/2004 CCHAU1 00000170 500417 10057923
01 FC:1402 330.00 DA

III. STATUS OF CLAIMS

Claims 1, 3, 7, 9, 10 and 12 are pending in this Application, of which claim 1 has been allowed. Claims 3, 7, 9, 10 and 12 have been finally rejected. It is from the final rejection of claims 7, 9, 10 and 12 that this Appeal is taken. Appellant does not appeal the Examiner's final rejection of claim 3.

IV. STATUS OF AMENDMENTS

No Amendment has been submitted subsequent to the issuance of the Final Office Action dated January 29, 2004.

V. SUMMARY OF THE INVENTION

The present invention addresses and solves problems attendant upon conventional semiconductor packages, such as inefficient heat dissipation (page 3 of the written description of the specification line 26 through page 4, line 16). Various embodiments of the present invention are illustrated which achieve that objective are illustrated, including the sixth embodiment depicted in Fig. 6 and discussed at page 15 of the written description of the specification, lines 8 et seq. This sixth embodiment is encompassed by claim 7 on appeal, the only independent claim. The claimed device comprises, *inter alia*, a heat sink plate 6 and a heat dissipation fin 6A, which is engagedly attached to the heat sink plate by means of engaging portions and which can comprise a screw in a threaded hole as recited in claims 9 and 12 (page 15 of the written description of the specification, lines 13 through 26). This embodiment achieves efficient heat dissipation as do other embodiments and, additionally, enables efficient fabrication attributed to the detachable mechanism (first paragraph on page 16 of the written description of the specification).

VI. ISSUES

A. **The Rejection:**

Claims 7, 9, 10 and 12 stand finally rejected under 35 U.S.C. §103 for obviousness predicated upon Schneider et al. in view of Oogaki et al.

B. **The issue which arises in this Appeal and requires resolution by the Honorably Board of Patent Appeals and Interferences (the Board), is:**

Whether claims 7, 9, 10, and 12 are inpatentable under 35 U.S.C. §103 for obviousness predicated upon Schneider et al. in view of Oogaki et al.¹

VII. GROUPING OF CLAIMS

The appeal claims stand or fall together with independent claim 7.

VIII. THE ARGUMENT

The pivotable issue on appeal is whether the Examiner discharged the initial burden of establishing the requisite fact-based motivation to support a *prima facie* case of obviousness under 35 U.S.C. §103. Previous technological arguments have fallen upon deaf ears. Appellants will show that the Examiner has not only declined to offer a fact-based explanation to support the asserted motivation, but the Examiner has completely ignored previous technological arguments refuting the Examiner's asserted motivation, which technological arguments stand **unrebutted**.

¹ As claim 3 has been withdrawn from Appeal, the Examiner's rejection of claim 3 under 35 U.S.C. §103 is not before the Honorable Board for review.

The Examiner's Position

The Examiner begins with a conventional prior art structure, which is illustrated by Schneider et al. in Fig. 4 and comprises a planar substrate 10 attached to a semiconductor die 306 by adhesive 412, and an optional external heat sink 14. On page 4 of the January 29, 2004 Final Office Action, lines 3 through 6, the Examiner admits, as he must, that:

Schneider et al. fail to disclose the heat sink plate and the heat dissipation fin having engaging portions brought into engagement with each other, whereby the engaging portions allow detachment of the heat dissipation fin from the heat sink plate.

The Examiner then turns to Oogaki and, in the second full paragraph on page 4 of the January 29, 2004 Final Office Action, offers the following rationale:

Oogaki et al. disclose the heat sink 7 and the heat sink 8 having engaging portions brought into engagement with each other, whereby the engaging portions allow detachment of the heat sink 8 from the heat sink 7 (cover fig., column 4, lines 1-10). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the device of Schneider et al. to provide the engaging portions to achieve a positive cooling effect for the package device, as shown by Oogaki et al.

In response to the technological arguments previously advanced and of record, the Examiner simply repeats the above quoted excerpt in the third full paragraph on page 7 of the January 29, 2004 Final Office Action. For reasons which will be apparent, Appellant submits that the Examiner completely failed to set forth any fact-based cogent line of reasoning to support the asserted motivation.

There is no motivation.

In order to establish the requisite motivation, the Examiner must do more than espouse a generalization devoid of any factual basis. *Ecolchem Inc. v. Southern California Edison, Co.* 227

F.3d 1361, 56 USPQ2d 1065 (Fed. Cir. 2000); In re Rouffet, 149 F.3d 1350, 47 USPQ2d 1453 (Fed. Cir. 1998). Rather, the Examiner must make a thorough and searching factual inquiry and, based upon that factual inquiry, explain why one having ordinary skill in the art would have been realistically impelled to modify particular prior art, in this case **the particular device** disclosed by Schneider et al., to arrive at the claimed invention. *In re Lee, 237 F.3d 1338, 61 USPQ2d 1430 (Fed. Cir. 2002).* That factual inquiry requires clear and particular factual findings as to a specific understanding or specific technological principle which would have realistically impelled one having ordinary skill in the art to modify the particular device disclosed by Schneider et al. to arrive at the claimed invention. *Ruiz v. A.B. Chance Co., 234 F.3d 654, 57 USPQ2d 1161 (Fed. Cir. 2000); Ecolochem Inc. v. Southern California Edison, Co., supra; In re Kotzab, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); In re Dembiczak, 175 F.3d 994, 50 USPQ2d 1614 (Fed. Cir. 1999).* Appellant would stress that a specific reason must be offered based upon facts to support the asserted motivation, not generalizations. *Ecolochem Inc. v. Southern California Edison, Co., supra; In re Rouffet, supra.* Indeed, regardless of wherein the motivation is found, the Examiner must provide particular factual findings related thereto. *In re Kotzab, supra; In re Dembiczak, supra.* Also, as stated by the Honorable Court of Appeals for the Federal Circuit in *Teleflex Inc. v. Ficosa North America Corp., 299 F.3d 1313, 63 USPQ2d 1374, 1387 (Fed. Cir. 2002):*

The showing of a motivation to combine must be clear and particular, and it must be supported by actual evidence.

In applying the above legal tenets to the exigencies of this case, Appellant submits that the requisite realistic motivation has not been established.

The Asserted “Positive Cooling”

The device disclosed by Schneider et al. **already has positive cooling**. The engageable/detachable portion of the device disclosed by Oogaki et al. would **not** add positive cooling to the device disclosed by Schneider et al., **because it already has positive cooling**. Therefore, the Examiner’s asserted motivation is not rooted in fact.

The Pieces do not Fit

The heat sink 8/heat sink 7 disclosed by Oogaki et al. is not provided solely for being engagement or disengagement, as the Examiner implicitly suggests. Rather, the **reason** for providing second heat sink 8 which is engageably held by the first heat sink 7 in the device disclosed by Oogaki et al. appearing on the face page of the patent, is to **accommodate a variation in the distance (c)** between the electronic parts 4 and the heat sink 7, such that minute **compensation** can be made with ease by turning the threaded heat sink 8 (column 4 of Oogaki et al., lines 23 through 26). Applicant previously argued, and **the Examiner does not deny**, that in the device disclosed by Schneider et al. there is **no variation in distance between the planar substrate 10** because the planar substrate 410 is bonded to the die 306 using adhesive 412. Further, even if there was a variation in distance, such could **not** possible be accommodated by bringing fin 414 into contact with the die 306, because it would be **blocked** by the planar substrate 410. Here, again, the Examiner's reason to modify the device of Schneider et al. achieves **no** objective based on facts.

The heat radiator disclosed by Oogaki et al. functions by conducting heat to the shield case 5-- **an element which does not even exist in the semiconductor device disclosed by Schneider et al.** It is for the purpose of conducting heat to the shield case 5 that the first heat sink 7 is provided and the second heat sink 8 formed such that it is engageably held by the first heat sink 7, thereby providing a

conductive path directly to the shield case 5, **again an element does not exist in the device disclosed by Schneider et al.** This is another reason why the Examiner's proposed modification of the device disclosed by Schneider et al. would not serve any apparent purpose, based upon facts.

Appellant's arguments stand unrebutted.

The above technological arguments have been advanced **several times** during prosecution, including in the Request for Reconsideration submitted November 6, 2003. Unfortunately, the Examiner has repeatedly **ignored** these technological arguments, which is inconsistent with the mandates of MPEP Section 707.07(f). Rather than confront the technological arguments advanced by Appellant, because the Examiner cannot do so, the Examiner repeats unsupported generalizations falling far short of judicial requirements. *Ecolochem Inc. v. Southern California Edison, Co., supra*; *In re Rouffet, supra*.

As the advanced technological arguments undermining the Examiner's asserted motivation stand **unrebutted**-the Examiner has failed to give these technological arguments lip service-Appellant's technological arguments are entitled to be accepted at face value. *In re Sony*, 54 F3d 746, 751, 34 USPQ2d 1684, 1688 (Fed. Cir. 1995); *In re Herrmann*, 261 F2d 598, 120 USPQ 182 (CCPA 1958).

Conclusion

It should, therefore, be apparent that the Examiner's reasoning underpinning the asserted motivation is without any factual or technological basis. Appellant's unrebutted technological arguments undermine the Examiner's announced conclusion. The Examiner has merely improperly identified features in disparate references and then asserted the obviousness conclusion. This approach is legally erroneous. *In re Kotzab*, 217 F.3d 1365, 55 USPQ 1313 (Fed. Cir. 2000); *Grain Processing*

basis to support the requisite motivation is found at Applicant's disclosure which, of course, is forbidden territory upon which the Examiner may trespass in order to excavate for a reason to modify a reference. *Panduit Corp. v. Dennison Mfg. Co.*, 774 F.2d 1082, 227 USPQ 337 (Fed. Cir. 1985).

Based upon the foregoing, Applicant submits that the imposed rejection of claims 7, 9, 10 and 12 under 35 U.S.C. §103 for obviousness predicated upon Schneider et al. in view of Tao et al. and Oogaki et al. is not factually or legally viable.

Summary

Appellant, therefore, submits the imposed rejection of claims 7, 9, 10 and 12 under 35 U.S.C. §103 for obviousness predicated upon Schneider et al. in view of Oogaki et al. is not factually or legally viable.

IX. PRAYER FOR RELIEF


Based upon the arguments submitted *supra*, Appellant submits that the Examiner's rejection under 35 U.S.C. §103 is not factually or legally viable. Appellant, therefore, solicits the Honorable Board to reverse the Examiner's rejection of claims 7, 9, 10 and 12 under 35 U.S.C. §103 for obviousness predicated upon Schneider et al. in view of Oogaki et al.

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

10/057,923

Respectfully submitted,

MCDERMOTT, WILL & EMERY


Arthur J. Steiner
Registration No. 26,106

600 13th Street, N.W.
Washington, DC 20005-3096
(202) 756-8000 AJS:ntb
Facsimile: (202) 756-8087
Date: May 3, 2004

X. APPENDIX

7. A semiconductor device, comprising:

a substrate;

a semiconductor chip mounted on the substrate;

external electrodes provided on the back of the substrate, for connecting electrodes of the semiconductor chip to the outside;

a sealing member for encapsulating the semiconductor chip on the substrate; and

a heat sink plate fixed by the sealing member, wherein

the heat sink plate has a heat dissipation fin formed integrally therewith, wherein the heat sink plate and the heat dissipation fin have engaging portions brought into engagement with each other, whereby the engaging portions allow detachment of the heat dissipation fin from the heat sink plate.

9. The semiconductor device according to claim 7, wherein the engaging portions are respectively formed at the heat sink plate and the heat dissipation fin and comprise a screw and a threaded hole brought into engagement with each other.

10. The semiconductor device according to claim 7, wherein the heat sink plate is disposed so as to be opposed to a main surface on which semiconductor elements of the semiconductor chip are formed.

12. The semiconductor device according to claim 10, wherein the engaging portions are respectively formed at the heat sink plate and the heat dissipation fin and comprise a screw and a threaded hole brought into engagement with each other.